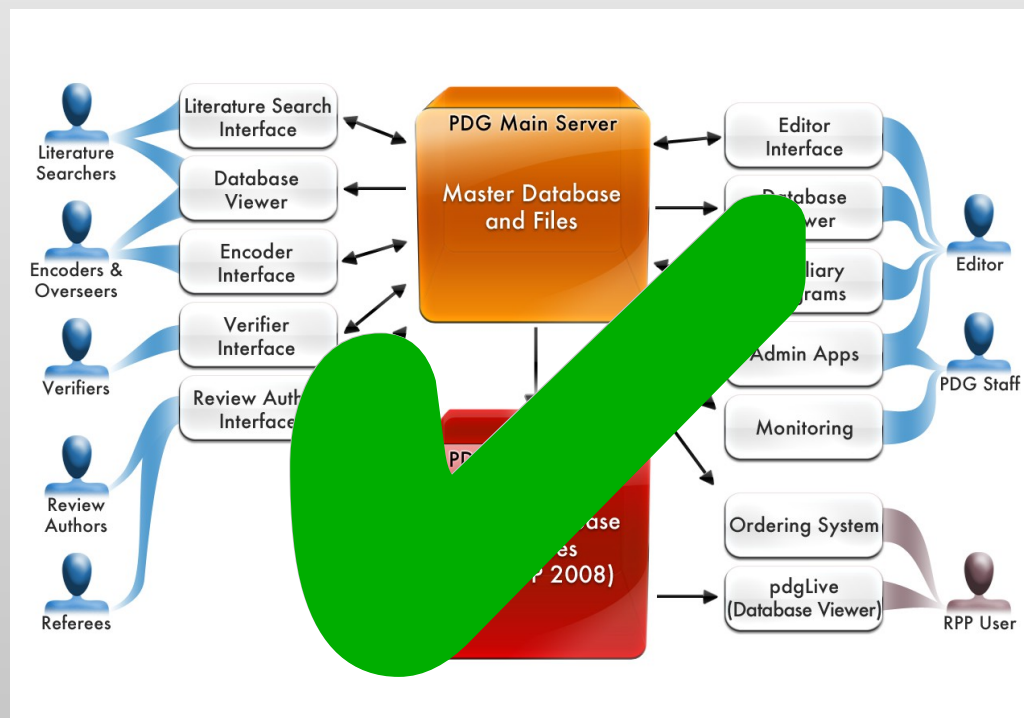


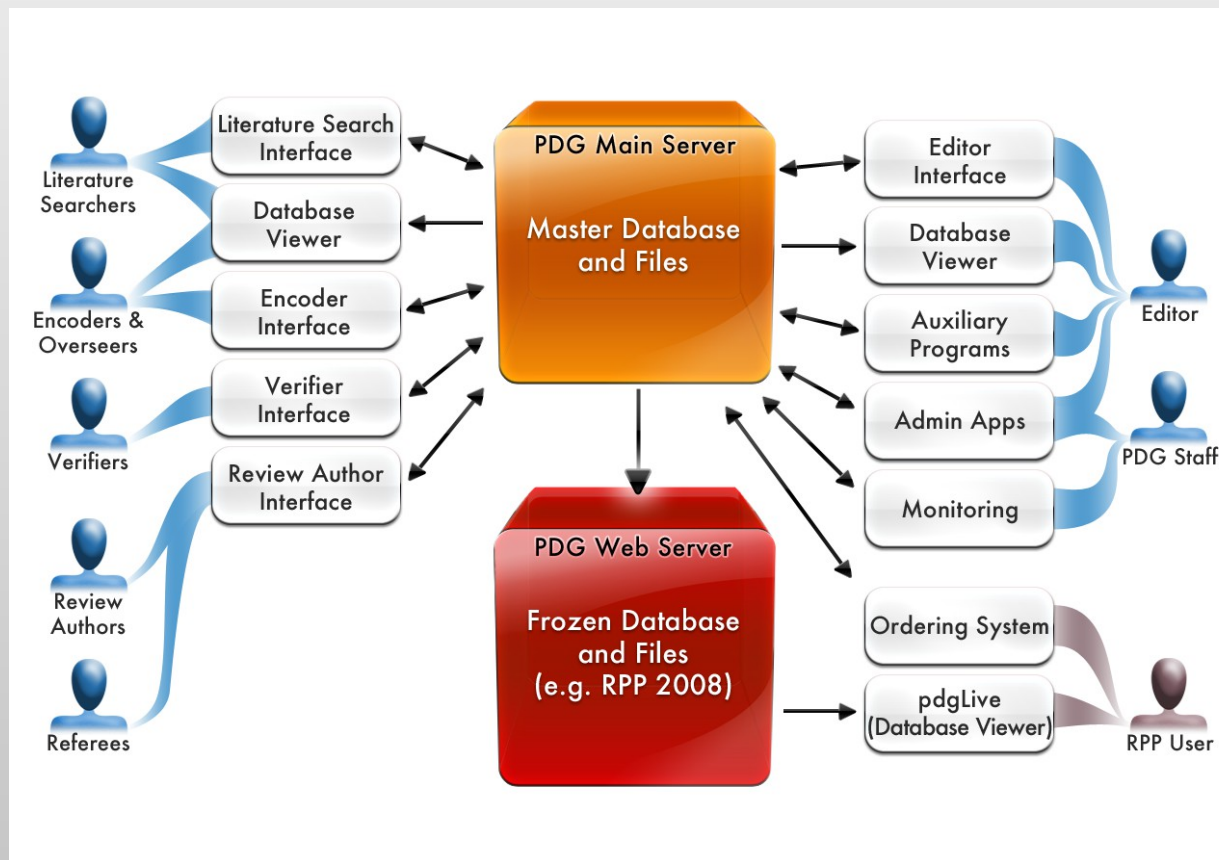
# Summary of PDG Computing Upgrade

**Juerg Beringer**

Lawrence Berkeley National Laboratory



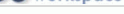
- **Developed and proposed plan for comprehensive upgrade of PDG computing infrastructure in 2007**
  - Primary goal: ensure PDG can continue to function well
  - Support all areas of PDG work, provide platform for future extensions
  - Set of web applications plus command-line production tools



- **Project funded following DOE review of PDG in 2008**
  - 2 FTE for 3 years for development
  - 0.5 FTE (ongoing) for maintenance (starting in FY11)
- **Backbone of new system deployed into production in 2010**
- **DOE review of computing upgrade project on 9/17/2010**
  - “... upgrade is proceeding on schedule and within cost ...”
- **Very positive feedback at PDG meetings in Fall 2010**
- **Presentation/publication at CHEP'2010 (Taiwan)**
- **Had hoped to complete project early (in August 2011)**
  - Unexpected reduction in developer availability from May 2011 onwards meant we had to spread duration over full 3 years
  - Limited use of PdgWorkspace for 2012 edition
- **Project completed on schedule and budget in December 2011**

- **All primary / high-priority web applications plus many secondary ones completed**
  - Very good progress on further features
- **Achieved much more regarding database modernization than thought possible**
- **Modern, extendable, maintainable and well-documented system**
- **Will only discuss subset here**

[illegible]


[Ordering Admin App](#) | [Monitor](#)

# Review authoring

Review Filters


Show my reviews ▾

Found 9 reviews

Title	▲ Latest version ▼	Finish draft by ▼	Finish refereeing by ▼	Status ▼
Accelerator Physics of Colliders	PDF	2013-08-31	2013-09-30	Published
Free Quark Searches	PDF	2013-08-31	2013-09-30	Published
High-Energy Collider Parameters	PDF	2013-08-31	2013-09-30	Published
Monte Carlo Techniques	PDF	2013-08-31	2013-09-30	Published
Probability	PDF	2013-08-31	2013-09-30	Published
Statistics	PDF	2013-08-31	2013-09-30	Published
tau Branching Fractions	PDF	2013-08-31	2013-09-30	Published
tau-Lepton Decay Parameters	PDF	2013-08-31	2013-09-30	Published
The Top Quark	PDF	2013-08-31	2013-09-30	Published



particle data group






Home
pdgLive
Summary Tables
Reviews, Tables, Plots
Particle Listings

New pdgLive (beta version) - please send feedback to [pdg-feedback-pdglive@pdg.lbl.gov](mailto:pdg-feedback-pdglive@pdg.lbl.gov)

**2012 Review of Particle Physics.**  
 Please use this CITATION: J. Beringer *et al.* (Particle Data Group), Phys. Rev. D**86**, 010001 (2012).

Gauge & Higgs Bosons	Leptons	Quarks
<b>Reviews on Gauge &amp; Higgs Bosons</b> $\gamma$ gluon graviton $W$ $Z$ Higgs Bosons Heavy Bosons	<b>Reviews on Leptons</b> $e$ $\mu$ $\tau$ Heavy Charged Lepton Neutrino Properties Number of Neutrino Types Double $\beta$ -Decay	<b>Reviews on Quarks</b> Light quarks ( $u, d, s$ ) $c$ $b$ $t$ $b'$ $f$ Free quark



# Ordering

Country\*  \* your country is not listed, see this page

United States of America

## Order publications

☐ 2010 Review of Particle Physics (Full report, available summer 2011)  
☐ 2010 Particle Physics Booklet (condensed report, 320 pages)  
☒ 2010 Particle Physics Booklet (Dissertation)  
☐ 2010-2010 Periodic Table of Elements (poster, photo file)

order CERN-20 August 2012 2.35pm GMT+02:00  
 order CERN-7 October 2012 4:07pm GMT+02:00  
 order CERN-10 July 2012 5:14pm GMT+02:00  
 in preparation - can be added

## Edit account information

\* indicates a field is required to be present

### Contact information


First Name	<input type="text"/>
Last Name	<input type="text"/>
Middle Name	<input type="text"/>
Last Name	<input type="text"/>
Street Address*	<input type="text"/>
	<input type="text"/>
	<input type="text"/>
City	<input type="text"/>
State	<input type="text"/>
Zip Code	<input type="text"/>
Category*	<input type="text"/>

### Account

<input type="text"/> User name* <input type="text"/> Password* <input type="text"/> Repeat new password* <input type="text"/> Email address*	<input type="text"/> Login <input type="text"/> I want to receive: <input type="text"/> New publication announcements <input type="checkbox"/> email mailing <input checked="" type="checkbox"/> by mail Note that if you unsubscribe, you will not receive PDX ordering announcements in the future.
---	--

Free newsletter on email by clicking [phone and book icon](#)

Log out


**PDG** *workspace*

[Ordering Admin App](#) | [Monitoring App](#) |

# Monitoring

**System status:**

- Summary
- Cron jobs

**Database changes:**

- Summary
- Transaction log
- Transaction details
- SVN diffs

**Users:**

- Summary
- Details

**Listings:**

- [Summary](#)

**Reviews:**

- Summary

**Debugging:**

- Configuration

**Status of active encodings by person**

Encoding period: 2011-07-01 to 2012-06-30

*NOTE: If a person has more than one role for a given encoding (e.g. both overseer and coordinator), only his lowest role is considered.*

▼ Assignment status of encoding teams

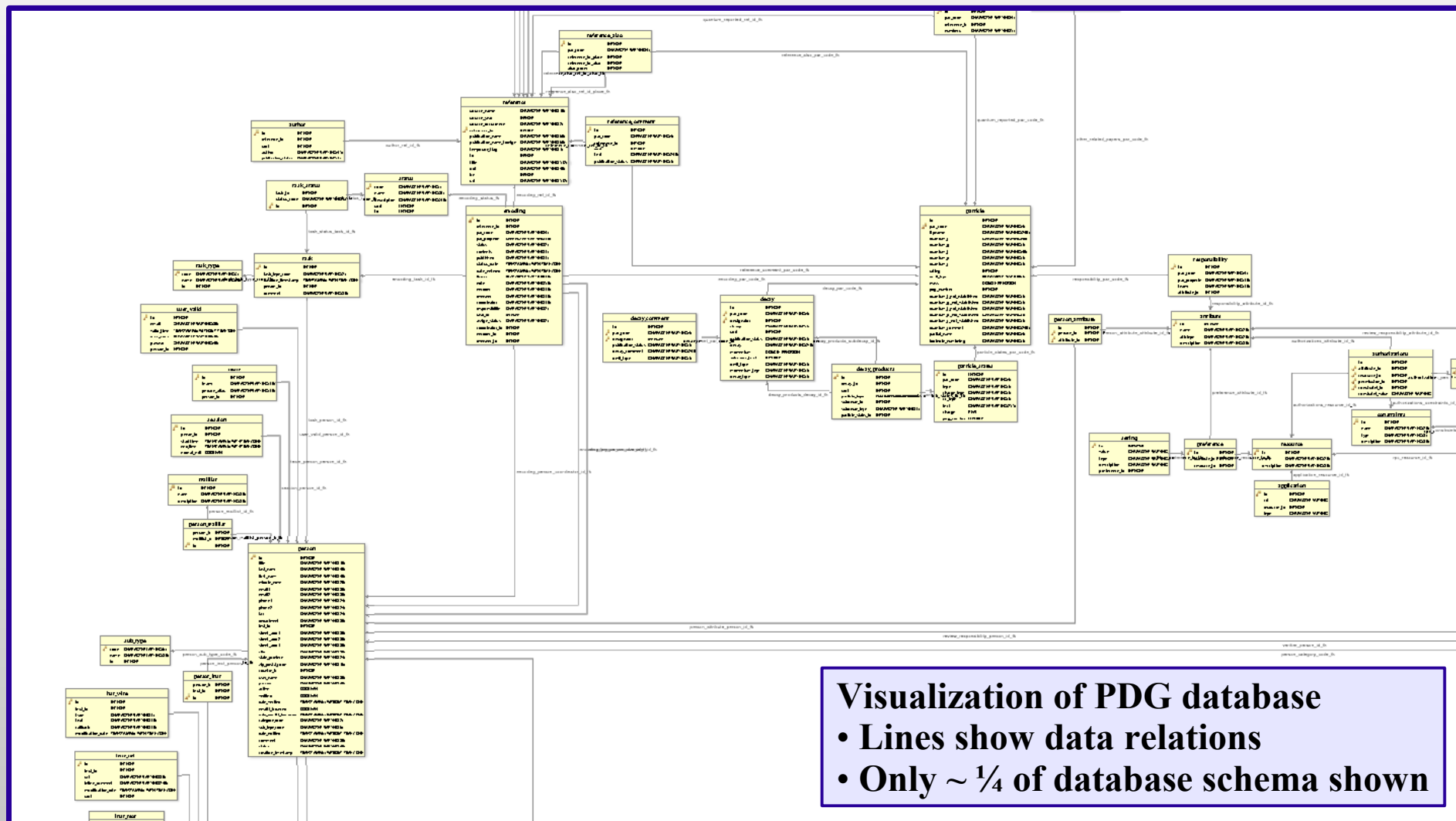
Team ▲	Released encodings ▼	Unassigned encodings ▼
GURTU/GRUN	12	12
MESONTEAM	61	61
MURA/OLIVE	0	0
T-NU-MIX	1	1
VOGEL/PIEP	19	19

► Status of Encoders

▼ Status of Overseers

Person ▲	Released Encodings ▼	Completed Encodings ▼	Fraction completed (%) ▼	Comments ▼
Arguin, Jean-Francois	94	0	0	
Barnett, Michael	8	0	0	
CKM-review, CKM-review	0	0	100	

- Large fraction of effort went into modernizing PDG database
  - One of the **most valuable results of the project** in the long term




- **Framework used by all web applications for PDG collaborators**
  - This is the starting point for working with the new system
- **When people log in, they'll see a set of applications tailored to the work they do for PDG**



The login interface for the PDG workspace. It features the PDG logo and the text 'workspace' in blue. Below this, it says 'Please log in.' in green. There are two input fields: one for 'user name or email address' and one for 'password'. A 'login' button is located below the password field. At the bottom, there is a link that says 'Forgot user name or password'.



- Tool for updating the Listings
- Successfully used by Kathy Copic for all her 2012 encodings
  - Even being new to PDG, she **found system very easy to use**
- Gradually invite encoders/overseers to start using new system
  - Kathy Copic is contact person in case of problems



**Encoding System**
Katherine Copic [log out](#)

**Task Filters**
[reset to defaults](#)

Show  for user 
[advanced filters](#)

**Task List - 37 total**

Task	Paper	Particle	Status	Encoder	Overseer	Note
AAD 2011AD	PRL 107 272002	S056	Overseen	Tanabashi	Copic	ATLAS
AAD 2011D	PR D83 112006	S056	Overseen	Tanabashi	Copic	ATLAS
AAD 2011H	PRL 106 251801	S056	Overseen	Tanabashi	Copic	ATLAS
AAD 2011J	PL B700 163	S056	Overseen	Tanabashi	Copic	ATLAS


[Encoding System](#) | [Monitoring App](#) |

Piotr Zyla [log out](#)

AAIJ 2011A (PL B698 14)

[reference details](#)
[add measurements](#)
[toolbox](#)
[review & sign off](#)
[return to task list](#)

Add New Measurement

Example:  
#ref{CAWLFIELD 2006A}  
also fits the Dalitz plot  
with broad  $\kappa^0$  or  
 $K^0$   $\pi^0$  resonances.

Footnote: [?]

\* Node [?]

\* Used? [?]

Value [?]

EVTS [?]

CL% [?]

TECN

Charge

Comment [?]

Data Block Browser

S086R13  $\Gamma(B_s^0 \rightarrow \pi^0 \pi^0) / \Gamma_{total}$   
S086R12  $\Gamma(B_s^0 \rightarrow \eta \pi^0) / \Gamma_{total}$   
S086R11  $\Gamma(B_s^0 \rightarrow \eta \eta) / \Gamma_{total}$   
**S086R24  $\Gamma(B_s^0 \rightarrow \rho^0 \rho^0) / \Gamma_{total}$**   
S086R27  $\Gamma(B_s^0 \rightarrow \phi \rho^0) / \Gamma_{total}$   
S086R29  $\Gamma(B_s^0 \rightarrow \phi \phi) / \Gamma_{total}$   
S086R7  $\Gamma(B_s^0 \rightarrow \pi^+ K^-) / \Gamma_{total}$   
S086R8  $\Gamma(B_s^0 \rightarrow K^+ K^-) / \Gamma_{total}$   
S086R39  $\Gamma(B_s^0 \rightarrow K^0 \bar{K}^0) / \Gamma_{total}$   
S086R25  $\Gamma(B_s^0 \rightarrow \bar{K}^*(892)^0 \rho^0) / \Gamma_{total}$   
S086R26  $\Gamma(B_s^0 \rightarrow \bar{K}^*(892)^0 K^*(892)^0) / \Gamma_{total}$   
S086R28  $\Gamma(B_s^0 \rightarrow \phi K^*(892)^0) / \Gamma_{total}$   
S086R16  $\Gamma(B_s^0 \rightarrow p \bar{p}) / \Gamma_{total}$


Datablock for Node [S086R24](#)

Value ()	CL%	Document ID	TECN	Comment	Actions
<3.20E-4		OUR BEST LIMIT			
<3.20E-4	90.0	ABE <sup>1</sup>	2000	SLD	$e^+ e^- \rightarrow Z$
*** We do not use the following data for averages, fits, limits, etc ***					
<sup>1</sup> ABE 0C assumes $B(Z \rightarrow b \bar{b}) = (21.7 \pm 0.1)\%$ and the $B$ fractions $f_{B^0} = f_{B^+} = (39.7^{+1.8}_{-2.2})\%$ and $f_{B_s} = (10.5^{+1.8}_{-2.2})\%$ .					



- **Tool for authoring and refereeing review articles**
- **Supports 3 ways for authors to write reviews**
  - **Traditional**: check out tar file of sources, run TeX locally, return revised source files to overseer / editor, who updates them in system
  - **Using subversion (SVN)**: check out source files via SVN, commit changes when ready, run TeX either locally or get PDF file from review authoring system
  - **Online**: edit source files in your browser, no local TeX needed
- **Other features include**
  - Keeps track of review responsibilities, status and deadlines
  - History of changes and “diff” between versions in various forms
  - Links between reviews and related items (reviews, data blocks) in order to improve consistency across RPP
  - Integrated into overall progress monitoring
- **Will be used starting with 2013 review updates**

# Review Task List


[Ordering Admin App](#) | [Monitoring App](#) | **Review App** | [Encoding System](#) |
 Juerg Beringer [log out](#)


**Review Filters**

Show

my reviews ▼

Found 9 reviews

Title ▲	Latest version ◆	Finish draft by ◆	Finish refereeing by ◆	Status ◆
<a href="#">Accelerator Physics of Colliders</a>	PDF	2013-08-31	2013-09-30	Published
<a href="#">Free Quark Searches</a>	PDF	2013-08-31	2013-09-30	Published
<a href="#">High-Energy Collider Parameters</a>	PDF	2013-08-31	2013-09-30	Published
<a href="#">Monte Carlo Techniques</a>	PDF	2013-08-31	2013-09-30	Published
<a href="#">Probability</a>	PDF	2013-08-31	2013-09-30	Published
<a href="#">Statistics</a>	PDF	2013-08-31	2013-09-30	Published
<a href="#">tau Branching Fractions</a>	PDF	2013-08-31	2013-09-30	Published
<a href="#">tau-Lepton Decay Parameters</a>	PDF	2013-08-31	2013-09-30	Published
<a href="#">The Top Quark</a>	PDF	2013-08-31	2013-09-30	Published


[Ordering Admin App](#) | [Monitoring App](#) | **Review App** | [Encoding System](#) |
 Juerg Beringer [log out](#)

[return to review list](#)

**Review: High-Energy Collider Parameters**

Details


Get source files

Edit online

History

Change review status

- Used for 2012 edition and found to be very helpful


[Ordering Admin App](#) | [Monitoring App](#) | Juerg Beringer [log out](#)

**System status:**

- Summary
- Cron jobs

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- SVN diffs

**Users:**

- Summary
- Details

**Listings:**

- [Summary](#)

**Reviews:**

- Summary

**Debugging:**

- Configuration

**Status of active encodings by person**  
Encoding period: 2011-07-01 to 2012-06-30

- Assignment status of encoding teams
- Status of Encoders
- Status of Overseers

Person	Released Encodings	Completed Encodings	Fraction completed (%)	Comments
Arguin, Jean-Francois	89	89	100	
Barnett, Michael	14	14	100	
Copic, Katherine	37	37	100	
Doser, Michael	86	86	100	
Groom, Don	7	7	100	
Gurtu, Atul	15	15	100	
Hikasa, Ken-ichi	55	55	100	
Lin, Cheng-Ju S	58	58	100	
M_\onig, Klaus	3	3	100	
Milstead, David	2	2	100	
Raffelt, Georg	20	20	100	
Terning, John	8	8	100	
Weiglein, Georg	97	97	100	
Wohl, Charles	82	82	100	
Yao, Wei-Ming	77	77	100	

- Status of Coordinators

## System status:

- Summary
- Cron jobs

## Database changes:

- Summary
- Transaction log**
- Transaction details
- SVN diffs

## Users:

- Summary
- Details

## Listings:

- Summary

## Reviews:

- Summary

## Debugging:

- Configuration

Database table  Max number of results

Changes from  until

Start and end time can be any legal PostgreSQL date/time specification (for example: today, 2011-02-01 14:00, ...). The table selector shows only tables that have any logging entries.

570 entries found (table limited to maximum of 100 entries):

Logging ID ▾	Timestamp ▴	Task ID ▴	Task type ▴	Person ▴	Trans type ▴	DB User ▴	Comment ▴
6054690	2012-05-18 19:27:16	0	None	None	U	pdgprod	default logging
6054689	2012-05-18 19:27:03	0	None	None	U	pdgprod	default logging
6054688	2012-05-18 19:26:36	0	None	None	I	pdgprod	default logging
6054687	2012-05-18 19:26:36	0	None	None	I	pdgprod	default logging
605066							
605066							

## Associated MEASUREMENT data:

WARNING: comparison is with current database contents; there may have been other changes in the mean time.

Field	Logging XML data	Current values
id	41463	41463
node	S032AG	S032AG
reference_id	54115	54115
occurrence	1	1
measurement	-5.9 + -5.9 + -2.1	-5.9 + -5.9 + -2.1 E-3
event_count	None	None
confidence_level	None	None

- Same look-and-feel as original pdgLive
- Many improvements and new features
- Deployed as “beta version” for RPP 2012, in parallel with original pdgLive
  - Wanted to be cautious, since maintenance person went on maternity leave two weeks before deployment
  - Will become primary version of pdgLive after fixing a few known issues
  - Already receives 2 to 3 times as much traffic as original pdgLive



The screenshot shows the pdgLive website interface. At the top is the PDG Live logo with the text 'particle data group' and 'Live'. Below the logo is a navigation bar with links: Home, pdgLive, Summary Tables, Reviews, Tables, Plots, and Particle Listings. A red banner below the navigation bar reads: 'New pdgLive (beta version) - please send feedback to [pdg-feedback-pdglive@pdg.lbl.gov](mailto:pdg-feedback-pdglive@pdg.lbl.gov)'. Below the banner is a section titled '2012 Review of Particle Physics.' with the text: 'Please use this CITATION: J. Beringer *et al.* (Particle Data Group), Phys. Rev. D86, 010001 (2012)'. The main content area is divided into three columns: Gauge & Higgs Bosons, Leptons, and Quarks. Each column has a 'Reviews on' link and a list of particle topics. Below these columns are sections for Mesons, Baryons, and Other Searches, each with a 'Reviews on' link and a list of topics.

Gauge & Higgs Bosons	Leptons	Quarks
<a href="#">Reviews on Gauge &amp; Higgs Bosons</a>	<a href="#">Reviews on Leptons</a>	<a href="#">Reviews on Quarks</a>
<a href="#">γ</a>	<a href="#">e</a>	<a href="#">Light quarks (u, d, s)</a>
<a href="#">gluon</a>	<a href="#">μ</a>	<a href="#">c</a>
<a href="#">graviton</a>	<a href="#">τ</a>	<a href="#">b</a>
<a href="#">W</a>	<a href="#">Heavy Charged Lepton</a>	<a href="#">t</a>
<a href="#">Z</a>	<a href="#">Neutrino Properties</a>	<a href="#">t'</a>
<a href="#">Higgs Bosons</a>	<a href="#">Number of Neutrino Types</a>	<a href="#">t'</a>
<a href="#">Heavy Bosons</a>	<a href="#">Double β-Decay</a>	<a href="#">Free quark</a>
<a href="#">Axions</a>	<a href="#">Neutrino Mixing</a>	
	<a href="#">Heavy Neutral Leptons</a>	

Mesons	Baryons	Other Searches
<a href="#">Reviews on Mesons</a>	<a href="#">Reviews on Baryons</a>	<a href="#">Reviews on Other Searches</a>
<a href="#">Light Unflavored</a>	<a href="#">N Baryons</a>	<a href="#">Magnetic Monopole</a>
<a href="#">Further States</a>	<a href="#">Δ Baryons</a>	<a href="#">Supersymmetric Particles</a>
<a href="#">Strange</a>	<a href="#">Exotic Baryons</a>	<a href="#">Technicolor</a>
<a href="#">Charmed</a>	<a href="#">Λ Baryons</a>	<a href="#">Quark and Lepton Compositeness</a>
<a href="#">Charmed, Strange</a>	<a href="#">Σ Baryons</a>	<a href="#">Extra Dimensions</a>
<a href="#">Bottom</a>	<a href="#">Ξ Baryons</a>	<a href="#">WIMPs</a>
<a href="#">Bottom, Strange</a>	<a href="#">Ω Baryons</a>	
<a href="#">Bottom, Charmed</a>	<a href="#">Charmed Baryons</a>	
<a href="#">c<math>\bar{c}</math></a>	<a href="#">Doubly-Charmed</a>	
<a href="#">b<math>\bar{b}</math></a>	<a href="#">Bottom Baryons</a>	
<a href="#">Non <math>q\bar{q}</math> Candidates</a>		

- Print-like-quality display of TeX on the web (using MathJax)

Old pdgLive

$\Gamma_6$	$\bar{D}^*(2007)^0 \ell^+ \nu_\ell$
$\Gamma_7$	$\bar{D}^*(2007)^0 \tau^+ \nu_\tau$

New pdgLive (beta)

$\Gamma_6$	$B^+ \rightarrow \bar{D}^*(2007)^0 \ell^+ \nu_\ell$
$\Gamma_7$	$B^+ \rightarrow \bar{D}^*(2007)^0 \tau^+ \nu_\tau$

- New presentation of branching ratios using folding sections

INSPIRE search

$B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell$

$\Gamma(B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell) / \Gamma_{total}$   $\Gamma_4 / \Gamma^{B^+}$

“OUR EVALUATION” is an average using rescaled values of the data listed below. The average and rescaling were performed by the Heavy Flavor Averaging Group (HFAG) and are described at <http://www.slac.stanford.edu/xorg/hfag/>. The averaging/rescaling procedure takes into account correlations between the measurements.  $\ell = e$  or  $\mu$ , not sum over  $e$  and  $\mu$  modes.

Value ()	Document ID	TECN	Comment
$0.0226 \pm 0.0011$	OUR EVALUATION		
$0.0229 \pm 0.0008 \pm 0.0009$	AUBERT <sup>1</sup>	2010	BABR $e^+ e^- \rightarrow \Upsilon(4S)$
$0.0234 \pm 0.0003 \pm 0.0013$	AUBERT	2009A	BABR $e^+ e^- \rightarrow \Upsilon(4S)$
$0.0221 \pm 0.0013 \pm 0.0019$	BARTELT <sup>2</sup>	1999	CLE2 $e^+ e^- \rightarrow \Upsilon(4S)$
$0.016 \pm 0.006 \pm 0.003$	FULTON <sup>3</sup>	1991	CLEO $e^+ e^- \rightarrow \Upsilon(4S)$
*** We do not use the following data for averages, fits, limits, etc ***			
$0.0233 \pm 0.0009 \pm 0.0009$	AUBERT <sup>1</sup>	2008Q	BABR Repl. by AUBERT 9A
$0.0194 \pm 0.0015 \pm 0.0034$	ATHANAS <sup>4</sup>	1997	CLE2 Repl. by BARTELT 99

<sup>1</sup> Uses a fully reconstructed  $B$  meson as a tag on the recoil side.

<sup>2</sup> Assumes equal production of  $B^+$  and  $B^0$  at the  $\Upsilon(4S)$ .



- Print-like-quality display of TeX on the web (using MathJax)

Old pdgLive

$\Gamma_6$	$\bar{D}^*(2007)^0 \ell^+ \nu_\ell$
$\Gamma_7$	$\bar{D}^*(2007)^0 \tau^+ \nu_\tau$

New pdgLive (beta)

$\Gamma_6$	$B^+ \rightarrow \bar{D}^*(2007)^0 \ell^+ \nu_\ell$
$\Gamma_7$	$B^+ \rightarrow \bar{D}^*(2007)^0 \tau^+ \nu_\tau$

- New presentation of branching ratios using folding sections

[INSPIRE search](#)

$B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell$

$\Gamma(B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell) / \Gamma_{total}$	$\Gamma_4 / \Gamma_{B^+}$
$\Gamma(B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell) / \Gamma(B^+ \rightarrow D \ell^+ \nu_\ell \text{ anything})$	$\Gamma_4 / \Gamma_3$
$\Gamma(B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell) / \Gamma(B^+ \rightarrow \ell^+ \nu_\ell \text{ anything})$	$\Gamma_4 / \Gamma_1$

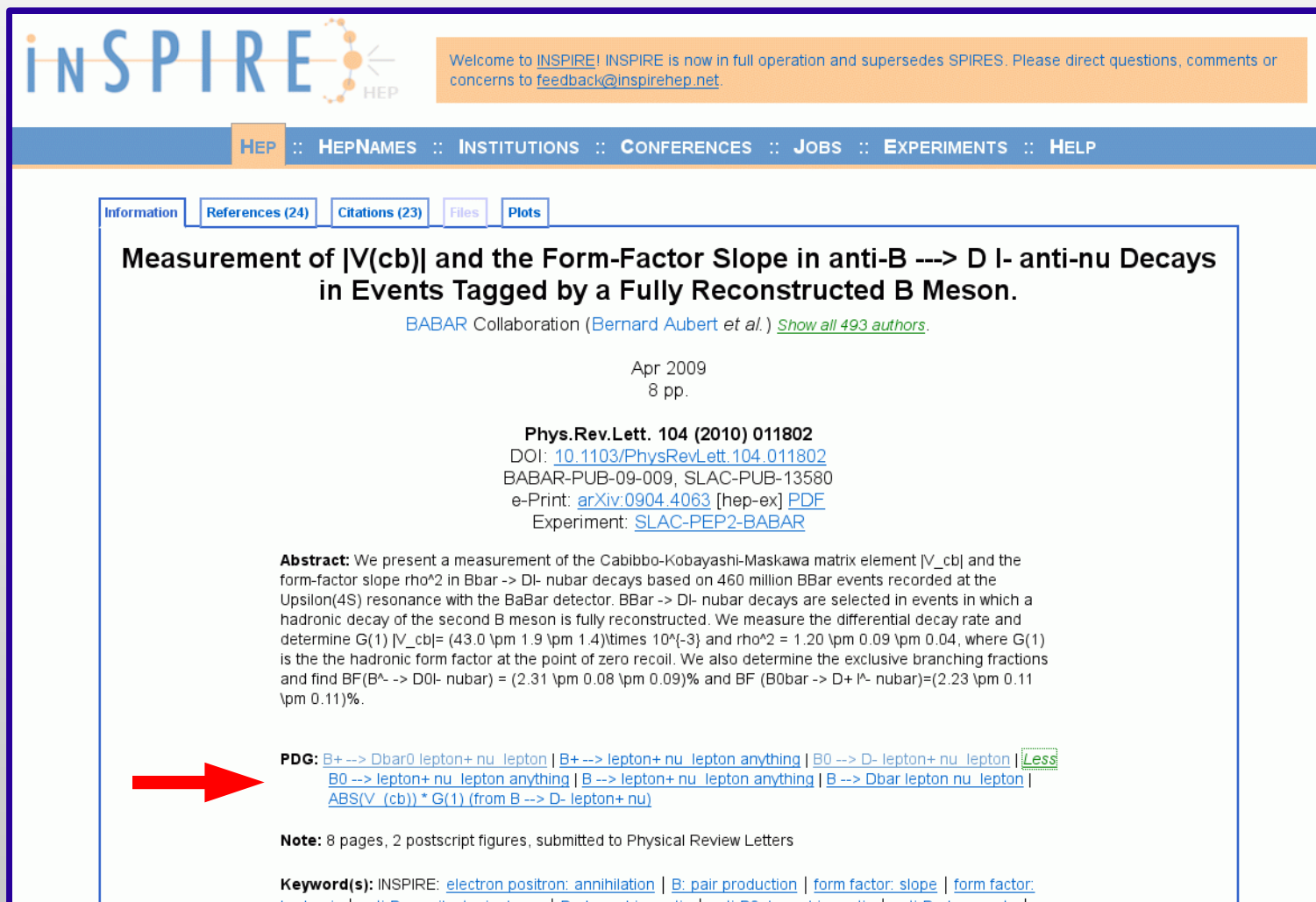
Value ()	Document ID	TECN	Comment
$0.255 \pm 0.013$	<b>OUR AVERAGE</b>		
$0.255 \pm 0.009 \pm 0.009$	AUBERT <sup>1</sup>	2010	BABR $e^+ e^- \rightarrow \Upsilon(4S)$
*** We do not use the following data for averages, fits, limits, etc ***			
<sup>1</sup> Uses a fully reconstructed $B$ meson on the recoil side.			

**References**

Document Id	Journal Name
AUBERT 2010	<a href="#">PRL 104 011802</a>

$\Gamma(B^+ \rightarrow \bar{D}^0 \tau^+ \nu_\tau) / \Gamma(B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell)$   $\Gamma_5 / \Gamma_4$

- Implemented with INSPIRE
  - Interest from Elsevier to do something similar in ScienceDirect



INSPIRE HEP

Welcome to INSPIRE! INSPIRE is now in full operation and supersedes SPIRES. Please direct questions, comments or concerns to [feedback@inspirehep.net](mailto:feedback@inspirehep.net).

HEP :: HEPNAMES :: INSTITUTIONS :: CONFERENCES :: JOBS :: EXPERIMENTS :: HELP

Information References (24) Citations (23) Files Plots

## Measurement of $|V_{cb}|$ and the Form-Factor Slope in anti-B $\rightarrow$ D l- anti-nu Decays in Events Tagged by a Fully Reconstructed B Meson.

BABAR Collaboration (Bernard Aubert *et al.*) [Show all 493 authors.](#)

Apr 2009  
8 pp.

Phys.Rev.Lett. 104 (2010) 011802  
DOI: [10.1103/PhysRevLett.104.011802](https://doi.org/10.1103/PhysRevLett.104.011802)  
BABAR-PUB-09-009, SLAC-PUB-13580  
e-Print: [arXiv:0904.4063](https://arxiv.org/abs/0904.4063) [hep-ex] [PDF](#)  
Experiment: [SLAC-PEP2-BABAR](#)

**Abstract:** We present a measurement of the Cabibbo-Kobayashi-Maskawa matrix element  $|V_{cb}|$  and the form-factor slope  $\rho^2$  in  $B\text{-} \rightarrow D l\text{-} \bar{\nu}$  decays based on 460 million  $B\text{-} \bar{B}$  events recorded at the Upsilon(4S) resonance with the BaBar detector.  $B\text{-} \rightarrow D l\text{-} \bar{\nu}$  decays are selected in events in which a hadronic decay of the second B meson is fully reconstructed. We measure the differential decay rate and determine  $G(1) |V_{cb}| = (43.0 \pm 1.9 \pm 1.4) \times 10^{-3}$  and  $\rho^2 = 1.20 \pm 0.09 \pm 0.04$ , where  $G(1)$  is the hadronic form factor at the point of zero recoil. We also determine the exclusive branching fractions and find  $BF(B^{\pm} \rightarrow D0 l\text{-} \bar{\nu}) = (2.31 \pm 0.08 \pm 0.09)\%$  and  $BF(B0\text{-} \rightarrow D^+ l\text{-} \bar{\nu}) = (2.23 \pm 0.11 \pm 0.11)\%$ .

**PDG:** [B+ --> Dbar0 lepton+ nu lepton](#) | [B+ --> lepton+ nu lepton anything](#) | [B0 --> D- lepton+ nu lepton](#) | [B0 --> lepton+ nu lepton anything](#) | [B --> lepton+ nu lepton anything](#) | [B --> Dbar lepton nu lepton](#) | [ABS\(V \(cb\)\) \\* G\(1\) \(from B --> D- lepton+ nu\)](#)

**Note:** 8 pages, 2 postscript figures, submitted to Physical Review Letters

**Keyword(s):** INSPIRE: [electron positron: annihilation](#) | [B: pair production](#) | [form factor: slope](#) | [form factor:](#)



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[Particle Listings](#)

New pdgLive (beta version) - please send feedback to [pdg-feedback-pdglive@pdg.lbl.gov](mailto:pdg-feedback-pdglive@pdg.lbl.gov)

[pdgLive Home](#) >

**2012 Review of Particle Physics.**  
Please use this CITATION: [J. Beringer et al.](#) (Particle Data Group), Phys. Rev. D**86**, 010001 (2012).


$B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell$ 
→ INSPIRE search

$\Gamma(B^+ \rightarrow \bar{D}^0 \ell^+ \nu_\ell) / \Gamma_{total}$ 
 $\Gamma_4 / \Gamma^{B^\pm}$

“OUR EVALUATION” is an average using rescaled values of the data listed below. The average and rescaling were performed by the Heavy Flavor Averaging Group (HFAG) and are described at <http://www.slac.stanford.edu/xorg/hfag/>. The averaging/rescaling procedure takes into account correlations between the measurements.  $\ell = e$  or  $\mu$ , not sum over  $e$  and  $\mu$  modes.

Value ()	Document ID	TECN	Comment
0.0226 ± 0.0011	OUR EVALUATION		
0.0229 ± 0.0008 ± 0.0009	AUBERT <sup>1</sup>	2010	BABR $e^+ e^- \rightarrow \Upsilon(4S)$
0.0234 ± 0.0003 ± 0.0013	AUBERT	2009A	BABR $e^+ e^- \rightarrow \Upsilon(4S)$

- Online since May 2011
- Will replace ordering via CERN library a few weeks after CERN ships 2012 booklets and diaries
  - Full statistics & contact info in one place (so far: split LBNL & CERN)
  - CERN will still ship orders for Europe, Africa, ...
- Users can subscribe to PDG mailing list(s)
- For PDG collaborators, same login as for PdgWorkspace


**Order Publications**

Submit
Reset form to previously saved values
Log out

Country \* - If your country is not listed, see [this page](#).

United States of America

**Order publications**

2012 Review of Particle Physics (Full report, available summer 2012)

2010 Particle Physics Booklet (condensed report; 306 pages)

☒ 2012 Particle Physics Booklet (Data booklet)

☐ 2012-2013 Pocket Diary for Physicists (calendar, phone list)

order SENT: 29 August 2012, 2:26pm GMT-07:00

order SENT: 7 October 2010, 6:57pm GMT-07:00

order placed: 13 July 2012, 5:14pm GMT-07:00

in preparation - can be ordered

**Edit account information**

\* indicates a field is required to be present

**Contact information**

Title

First Name \*

Middle Name

**Account**

User name \*

Passwords must be at least 8 characters, and have at least one numeral, one capital letter, and one lower-case letter.

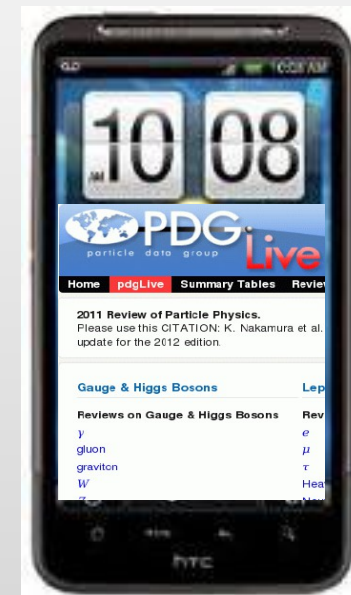
New password



- **Want to **gradually** get collaborators started with new system**
  - Allows to **provide very good support** and fix any problems quickly, if needed
- **Start inviting encoders, overseers and literature searchers in December**
  - Use new system for 2013 encodings
- **Start inviting review authors in Spring/Summer 2013**
  - In time for next review update
- **Documentation & help available**
  - Documentation (TWiki): <http://pdgprod.lbl.gov/twiki/bin/view/Pdg/> (plus very detailed internal technical documentation)
  - Each application has a responsible contact person – see Twiki



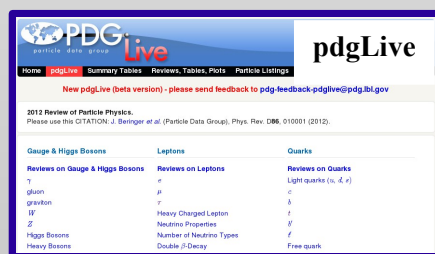
- **New PDG computing system provides solid basis for implementing new features**
  - Realizing substantial new features still requires a development effort
- **Many ideas / requests for new features from PDG**
  - **Smartphone app**
  - **New features for pdgLive**
  - **Data entry by collaborations?**
  - **Download of PDG data in machine-readable format**
    - For individual data blocks (XML, via pdgLive)
    - All PDG data (in a SQLite database)
  - Extending PDG computing platform to support averaging groups?
  - Programmatic access to PDG database outside of PDG collaboration?
  - ...





- **Most (but not all) collaborators opposed to allowing large collaborations (or authors in general) to suggest data entries**
  - Even though PDG would validate/correct all entries published in RPP
  - Not much enthusiasm for a version of pdgLive that would, if the user chooses so, show contributed entries in addition to official PDG ones
  - Maybe let large collaborations provide references online
  - Reasons: **increased amount of work** (particularly in case of controversial issues), and the notion that this **might undermine PDG's authority**
- **Downloadable data as a priority (anyway needed for PDG app)**
- **Cross-linking with HepData**
- **Plans and ideas from publishers reinforce our emphasis on developing both a PDG app and going beyond PDF format on the web (pdgLive, “article of the future”, eBooks?, ...)**
- **Wish for author information in XML format and using ORCID**

- **PDG Computing Upgrade project successfully completed on schedule and within budget in December 2011**
  - Backbone of new system used in production since summer 2010
  - Encoding interface and monitoring used for producing RPP 2012
- **As a result of this project, PDG now has a solid computing platform on which we can build**
  - Modern, extendable, maintainable and well-documented
- **Gradually inviting collaborators to start using new system**
  - Will allow us to provide very good support and fix problems quickly



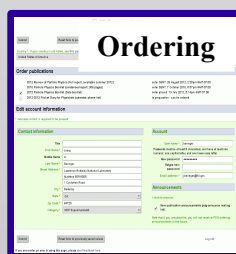
**pdgLive**

Home | **pdgLive** | Summary Tables | Reviews, Tables, Plots | Particle Listings

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2012 Review of Particle Physics.  
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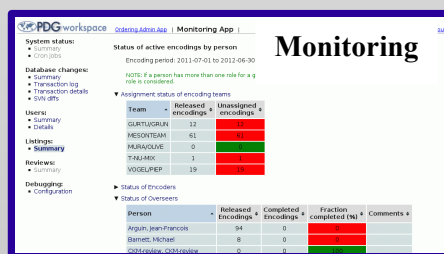
Category	Leptons	Quarks
Gauge & Higgs Bosons		
Reviews on Gauge & Higgs Bosons	Reviews on Leptons	Reviews on Quarks
$\gamma$	$e$	Light quarks ( $u, d, s$ )
gluon	$\mu$	$c$
graviton	$\tau$	$b$
$W$	Heavy Charged Lepton	$f$
$Z$	Neutrino Properties	$g$
Higgs Bosons	Number of Neutrino Types	
Heavy Bosons	Double $J$ Decay	Free quark



**Ordering**

Ordering interface for PDG Live. It includes sections for 'Ordering interface', 'Status of encodings by person', and 'Status of encodings by team'. The 'Status of encodings by team' table shows the following data:

Team	Released encodings	Unassigned encodings
CLUTTERBURN	12	0
RESONANCE	61	0
KARAKULOV	0	0
THALAKK	1	0
VOGELPHEP	19	0



**Monitoring**

Monitoring interface for PDG Live. It includes sections for 'System status', 'Status of active encodings by person', 'Status of encodings by team', and 'Status of encodings by person'. The 'Status of encodings by person' table shows the following data:

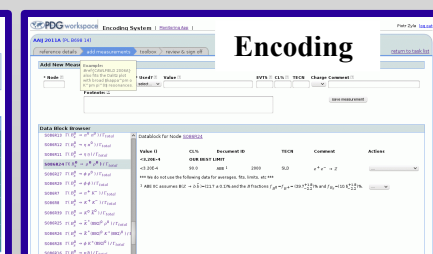
Person	Released Encodings	Completed encodings	Fraction completed (%)	Comments
Arguin, Jean-Francois	161	0	0	
Bennett, Michael	8	0	0	
CHAKRABARTY, Debajyoti	0	0	0	



**Review authoring**

Review authoring interface for PDG Live. It includes sections for 'Review Filters', 'Found 9 reviews', and a table of reviews. The table shows the following data:

Title	Latest version	Finish draft by	Finish refereeing by	Status
Accelerator Physics of Colliders	PDF	2013-08-31	2013-09-30	Completed
Free Quark Searches	PDF	2013-08-31	2013-09-30	Completed
High-Energy Collider Parameters	PDF	2013-08-31	2013-09-30	Completed
Monte Carlo Techniques	PDF	2013-08-31	2013-09-30	Completed
Probability	PDF	2013-08-31	2013-09-30	Completed
Statistics	PDF	2013-08-31	2013-09-30	Completed
$\tau$ Branching Fractions	PDF	2013-08-31	2013-09-30	Completed
$\tau$ Lepton Decay Parameters	PDF	2013-08-31	2013-09-30	Completed
The Top Quark	PDF	2013-08-31	2013-09-30	Completed



**Encoding**

Encoding interface for PDG Live. It includes sections for 'Add new encoding', 'Encoding interface', and a table of encodings. The table shows the following data:

Encoding ID	Encoding Name	Encoding Type	Encoding Status	Encoding Date	Encoding User	Encoding Comment	Encoding Action
000001	$\gamma \rightarrow e^+ e^-$	Decay	Completed	2013-08-31	Arguin, Jean-Francois		
000002	$\gamma \rightarrow \mu^+ \mu^-$	Decay	Completed	2013-08-31	Arguin, Jean-Francois		
000003	$\gamma \rightarrow \tau^+ \tau^-$	Decay	Completed	2013-08-31	Arguin, Jean-Francois		
000004	$\gamma \rightarrow e^+ e^- \gamma$	Decay	Completed	2013-08-31	Arguin, Jean-Francois		
000005	$\gamma \rightarrow \mu^+ \mu^- \gamma$	Decay	Completed	2013-08-31	Arguin, Jean-Francois		
000006	$\gamma \rightarrow \tau^+ \tau^- \gamma$	Decay	Completed	2013-08-31	Arguin, Jean-Francois		
000007	$\gamma \rightarrow e^+ e^- \gamma \gamma$	Decay	Completed	2013-08-31	Arguin, Jean-Francois		
000008	$\gamma \rightarrow \mu^+ \mu^- \gamma \gamma$	Decay	Completed	2013-08-31	Arguin, Jean-Francois		
000009	$\gamma \rightarrow \tau^+ \tau^- \gamma \gamma$	Decay	Completed	2013-08-31	Arguin, Jean-Francois		
000010	$\gamma \rightarrow e^+ e^- \gamma \gamma \gamma$	Decay	Completed	2013-08-31	Arguin, Jean-Francois		

# Backup Slides

# Intrinsically Challenging



- **Convert ancient legacy software into modern system without disrupting ongoing PDG work**
  - Gradually transform  $O(100)$  disconnected data tables into modern relational database with integrity constraints and change tracking
- **Complex distributed workflow with hundreds of users**
- **Correctness of data is paramount**
  - New system produces “identical” manuscript of 1400+ page book
- **Display of math on the web**
- **PDG schedule leaves only few deployment opportunities**
  - Gradual deployment, starting in August 2010

- **Focus and prioritize**
  - Identified technically challenging areas: **database, math display**
  - **Focus on cornerstone of new system**: modern PDG database
  - **Complete primary and difficult applications / middleware first**
  - Secondary applications lower priority than publication-critical ones
- **Avoid scope creep and keep to original goals**
  - Sometimes hard, since new system offers so many exciting opportunities for extension beyond the project's scope
- **Strong involvement from PDG group**
  - Orin Dahl, Piotr Zyla, JB
  - Many others helped with testing

- **Excellent documentation emphasized from beginning**
  - Manuals
  - TWiki
  - Inline code documentation, man pages, help

## Public, for PDG collaborators:

TWiki > Pdg Web > WebHome (2011-12-15, Main:beringer) Edit Attach

### Welcome to the TWiki of the Particle Data Group

This TWiki provides **information for PDG collaborators** about the new PDG computing system. Other information is available:

- The public PDG web pages can be found at <http://pdg.lbl.gov>.
- For general information about working in the PDG collaboration please refer to the [Encoder Tools section of the PDG web page](#).
- Information for PDG Computing developers can be found in the [Computing TWiki \(protected\)](#).

### How to get Started with the New PDG Computing System

The new PDG Computing System supports all activities of the PDG collaboration through a set of web-based tools. Most of these tools are accessed through a single portal called [PdgWorkspace](#). The URL of this portal is:

<http://pdgprod.lbl.gov/PdgWorkspace/>

In order to access [PdgWorkspace](#), you need a PDG web account with a username (typically your e-mail address) and a password. If you ever used the [new PDG ordering system](#), you already have a PDG web account. Otherwise a new one will be created for you. Your PDG web account needs to be authorized and associated with your roles in the PDG collaboration before you can use it to access [PdgWorkspace](#).

The new PDG computing system and the use of [PdgWorkspace](#) are currently being phased in. We will contact each collaborator in due course with information about their PDG web account. However, if you do want to jump right in as soon as possible, you may request the creation and authorization of your PDG web account by contacting [Piotr Zyla](#).

### Brief Description of the different tools in PdgWorkspace

When you log into [PdgWorkspace](#), the system knows your role and responsibilities in PDG, and will give you access to the corresponding tools. These tools may include:

- **Encoding Tool:** The encoding tool supports the full encoding cycle for entering new results into the Listings. It is used by Literature Searchers, Encoder, Overseers, and Coordinators.
- **Review Author Tool:** The review author tool supports the authoring of review articles. It is used by review authors, review coordinators and referees (*deployed starting summer 2012*).
- **Monitoring Tool:** The monitoring tool is a comprehensive tool for monitoring the status of PDG work as well as the new computing system itself.
- **Administrative tools:** Various administrative tools support different tasks such as managing the ordering system, creating user accounts, etc.

### Frequently Asked Questions (and Answers)

- **I didn't find what I need - where can I get help?** Depending on what you're looking for, please contact one of the persons listed below:
  - Questions about how to encode something for the Listings: [Piotr Zyla](#)
  - Technical questions about PdgWorkspace: [Sarah Poon](#)
  - Technical questions about the PDG ordering system: [Sarah Poon](#)
  - Special requests regarding ordering of PDG products: [pdgrequest@lbl.gov](mailto:pdgrequest@lbl.gov)
  - General questions, or if you are unsure whom to ask: [Juerg Beringer](#)

## Protected, for developers:

TWiki > Computing Web > WebHome (2011-12-22, Main:beringer) Edit Attach

### PDG Computing Upgrade

#### Meetings and Communication

- **Meetings:** As needed, will be announced on our computing mailing list (see below). Minutes (where available) can be found [here](#).
- **Mailing lists:** We use the mailman mailing list [computing@pdg.lbl.gov](mailto:computing@pdg.lbl.gov) for general e-mail and discussions related to PDG computing. You can subscribe/unsubscribe to this list at <http://pdg.lbl.gov/mailman/listinfo/computing>. An [archive of past messages](#) is available. For other mailing lists, please see [MailingListOverview](#).

#### Computing Upgrade Phase 2 (2008-2011)

##### General information:

- [Project plan and ToDo List](#)
- [High level requirements document](#)
- [Use Cases and Design documents](#)
- [Overview of technologies](#)
- [PDG Identifiers](#)
- [Tests, demos and Tutorials](#)
- [Talks, Proceedings and Publications](#)

##### System setup, installation, and administration:

- [Software Releases](#)
- [Software installation and procedures for deploying releases and updates](#)
- [Development Environment](#)
- [Setup of PDG servers](#)
- [Backups](#)
- [Migration from CVS to SVN code repository](#)
- Project(s) in SVN: [SysMan](#), [BuildTools](#)

##### PDG database:

- [RedBook \(version for current production databas\)](#)
- [Detailed database information](#)
- [Wish list for future database changes](#)
- Project(s) in SVN: [Database](#)

##### Middle layer (API, database access, macro processing):

- [Java API](#)
- [Python API](#)
- Project(s) in SVN: [JavaApi](#), [JavaDao](#), [PyApi](#)
- Docs from nightly build: [PyApi](#)

##### PDG workspace:

- [Framework and plugin design for PDG workspace](#)
- [Tomcat Webapps](#)
- [PDG Workspace](#)
- [Demoinfo](#)
- [EncodingSystemTaskData](#)



- **Hands-on involvement of PDG personnel ensures excellent knowledge of new system from start**
- **Schema migration tutorial/exercise on 12/21/2011**
  - Using a copy of the new system locally installed on our laptops, successfully modified the database schema, updated all necessary software components, and recompiled everything
- **Sarah Poon retained as maintenance person**
  - On maternity leave since 6/13/2012, back since September
- **Other developers still accessible at LBNL if needed**

- **Juerg Beringer (PDG physicist)**
  - Project leader, requirements, system architecture
- **Chuck McParland (computer scientist)**
  - Java API
- **Sarah Poon (computer systems engineer)**
  - Web design, user interfaces, JavaScript
- **David Robertson (computer systems engineer)**
  - Database, Python API, scripts
- **Orin Dahl (PDG physicist, retired)**
  - Legacy Fortran programs
- **Piotr Zyla (PDG editor)**
- **Contributions from Jacob Andreas, Cecilia Aragon, Keith Beattie, Igor Gaponenko, Keith Jackson, Kirill Lugovsky, Slava Lugovsky**

**Each member of the team has many years of software development experience**

```

from PDG Nightly Builds <pdg-build@george.lbl.gov>★
subject PDG nightly build report
to PDG Build list <pdg-build@george.lbl.gov>★

pdg-job-runner.sh: Wed May 30 04:01:01 PDT 2012 starting...

success pdgbuild-recreate.sh in 112 secs
success python.sh in 4 secs
success JavaApi in 39 secs
success JavaDao in 24 secs
success AuthApi in 25 secs
success JavaModels in 23 secs
* failure PdgWorkspace (1) in 32 secs
success OrderingApp in 29 secs

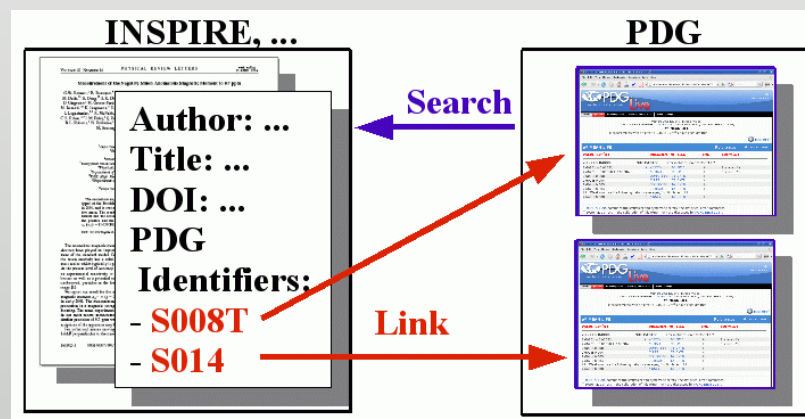
See http://pdg6.lbl.gov/cgi-bin/pdg-monitor.cgi for details
pdg-job-runner.sh: Wed May 30 04:05:50 PDT 2012 done.
  
```

```

[WARNING] /home/pdgbuild/pdgbuild-work/PdgWorkspace/src/main/java/pdg/workspace/helpermodels/EncodingTask.java:39: warning: - @return tag has no arguments.
[WARNING] /home/pdgbuild/pdgbuild-work/PdgWorkspace/src/main/java/pdg/workspace/ext/BranchingRatioFormatter.java:58: warning: - @param argument "s" is not a parameter name.
[INFO] [resources:resources {execution: default-resources}]
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 0 resource
[INFO] [compiler:compile {execution: default-compile}]
[INFO] Compiling 39 source files to /home/pdgbuild/pdgbuild-work/PdgWorkspace/target/classes
[INFO] -----
[ERROR] BUILD FAILURE
[INFO] -----
[INFO] Compilation failed
/home/pdgbuild/pdgbuild-work/PdgWorkspace/src/main/java/pdg/workspace/ext/StringFormatter.java:[128,49] cannot find symbol
symbol : method getDisplayText()
location: class pdg.macro.util.displayPrimitive.DisplayMeasurementTex

[INFO] -----
[INFO] For more information, run Maven with the -e switch
[INFO] -----
[INFO] Total time: 28 seconds
[INFO] Finished at: Wed May 30 04:05:20 PDT 2012
[INFO] Final Memory: 59M/981M
[INFO] -----
building done.
  
```

- **Wish list:**
  - From INSPIRE: ***“What data does PDG have about this?”***
  - From PDG: ***“What are the latest papers on this topic?”***
- **Permanent reference to PDG data items: PDG Identifiers**
  - Essentially PDG nodes (e.g. “Q007TP”)
  - Supported by pdgLive: e.g. <http://pdglive.lbl.gov/view/Q007TP>
  - Authoritative list available from [pdg.lbl.gov](http://pdg.lbl.gov) (under “Downloads”)



- **Used for cross-linking to/from INSPIRE**
  - Interest from Elsevier to do something similar in ScienceDirect

- **Should we allow the community to enter new results directly into the PDG database?**
  - In particular large collaborations such as LHC experiments
  - A result is best known/understood by its author
  - **PDG would still validate all entries to be published in RPP**
    - Could start with a draft entry rather than just the article
    - Easier to include latest results
  - **In principle, pdgLive, could show user-contributed data in addition to data vetted by PDG**
    - **Users choose whether they want to see user-contributed entries**
    - User-contributed entries could appear online immediately
    - User-contributed data might include unpublished (public) data
    - Fits and averages including user-contributed data possible
  - Should be able to **minimize abuse** by requiring authentication and displaying the identity of contributors

**Is this something worth pursuing?**